General

Guideline Title

Best evidence statement (BESt). Axillary temperature taking tools: the evidence for change.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BESt). Axillary temperature taking tools: the evidence for change. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2011 Apr 18. 4 p. [6 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of evidence (1a-5) are defined at the end of the "Major Recommendations" field.

It is recommended that the chemical dot thermometer be used to measure axillary temperature among pediatric patients over the age of 2 months (Barton et al., 2003 [4a]; El Radhi & Patel, 2007 [4b]; Khorshid et al., 2005 [4a]; Van den Bruel et al., 2005 [4a]; local data [5]).

Note 1: The chemical dot axillary temperature measurements were statistically as equally accurate as the electronic temperature measurements with an average difference (bias) of 0.76° F (95% limits of agreement 2.35 and -0.84) (Barton et al., 2003 [4a]).

Note 2: Local cost of purchasing chemical dot thermometers is less than the cost of purchasing, maintaining and providing probe covers for the electronic thermometer (local data [5]).

Note 3: The disposable nature of the chemical dot thermometer may prevent the spread of infection among patients (Barton et al., 2003 [4a]).

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain

Quality Level	Definition
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

Table of Recommendation Strength

Strength	Definition
"Strongly recommended"	There is consensus that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
"Recommended"	There is consensus that benefits are closely balanced with risks and burdens.
No recommendation made	There is lack of consensus to direct development of a recommendation.
Dimensions: In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.	
1. Grade of the Body of Evidence (see note above) 2. Safety/Harm 3. Health benefit to patient (direct benefit) 4. Burden to patient of adherence to recommendation (cost, hassle, discomfort, pain, motivation, ability to adhere, time) 5. Cost-effectiveness to healthcare system (balance of cost/savings of resources, staff time, and supplies based on published studies or onsite analysis) 6. Directness (the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome]) 7. Impact on morbidity/mortality or quality of life	

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

- Any condition which may cause a change in body temperature
- Fever or suspicion of fever

Guideline Category

Technology Assessment

Clinical Specialty

Family Practice

Internal Medicine

Pediatrics

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To evaluate among pediatric patients ages 2 months to 21 years if taking their axillary temperature using a chemical dot thermometer versus an electronic thermometer improves the accuracy and efficiency of the temperature taken, decrease cost, and maintain infection control standards

Target Population

Children 2 months to 21 years of age

Interventions and Practices Considered

Chemical dot thermometer versus an electronic thermometer

Major Outcomes Considered

- Accuracy and efficiency of the temperature taken
- Cost
- Infection control standards

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search Strategy

- Databases used: Medline, CINAHL, Cochrane databases
- Key words used: Pediatric, temperature, axillary, chemical dot, electronic, digital
- Filters/limits: English language
- Date range searched: all through August 1, 2010

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5	Other: General review, expert opinion, case report, consensus report, or guideline

†a = good quality study; b = lesser quality study

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Table of Recommendation Strength

Strength	Definition
"Strongly recommended"	There is consensus that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
"Recommended"	There is consensus that benefits are closely balanced with risks and burdens.
No recommendation made	There is lack of consensus to direct development of a recommendation.

Strength	Definition
Directions: In determining the strength of a recommendation, the development group makes a considered judgment in a consensus process that incorporates critically appraised evidence, clinical experience, and other dimensions as listed below.	

1. Grade of the Body of Evidence (see note above)
2. Safety/Harm
3. Health benefit to patient (direct benefit)
4. Burden to patient of adherence to recommendation (cost, hassle, discomfort, pain, motivation, ability to adhere, time)
5. Cost-effectiveness to healthcare system (balance of cost/savings of resources, staff time, and supplies based on published studies or onsite analysis)
6. Directness (the extent to which the body of evidence directly answers the clinical question [population/problem, intervention, comparison, outcome])
7. Impact on morbidity/mortality or quality of life

Cost Analysis

Local cost of purchasing chemical dot thermometers is less than the cost of purchasing, maintaining, and providing probe covers for the electronic thermometer.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

Reviewed against quality criteria by two independent reviewers

Evidence Supporting the Recommendations

References Supporting the Recommendations

Barton SJ, Gaffney R, Chase T, Rayens MK, Piyabanditkul L. Pediatric temperature measurement and child/parent/nurse preference using three temperature measurement instruments. J Pediatr Nurs. 2003 Oct;18(5):314-20. PubMed

El-Radhi AS, Patel SP. Temperature measurement in children with cancer: an evaluation. Br J Nurs. 2007 Nov 22-Dec 12;16(21):1313-6. PubMed

Khorshid L, Eser I, Zaybak A, Yapucu U. Comparing mercury-in-glass, tympanic and disposable thermometers in measuring body temperature in healthy young people. J Clin Nurs. 2005 Apr;14(4):496-500. PubMed

Van den Bruel A, Aertgeerts B, De Boeck C, Buntinx F. Measuring the body temperature: how accurate is the Tempa Dot. Technol Health Care. 2005;13(2):97-106. PubMed

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

- Improved accuracy and efficiency of the temperature taken
- Decreased cost
- Maintenance of infection control standards

Potential Harms

- Falsely high or low temperature readings could result in unnecessary diagnostic procedures and treatment and/or missed diagnosis.
- Use of medical equipment, without proper cleaning between patients, may increase risk of cross-contamination.

Qualifying Statements

Qualifying Statements

- This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.
- It was noted that some nursing staff did not understand the correct techniques for the available equipment to obtain the most accurate temperature on each patient. Inconsistent practice across nursing units decreased the accuracy of axillary temperatures.

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Identifying Information and Availability

Bibliographic Source(s)

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Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2011 Apr 18

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

Cincinnati Children's Hospital Medical Center

Guideline Committee

Not stated

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

The authors do not have any conflict of interest to report.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Jan. 1 p. Available from the Cincinnati Children's Hospital Medical Center .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 1 p. Available from the Cincinnati Children's Hospital Medical Center .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2008 Feb 29. 1 p. Available from the Cincinnati Children's Hospital Medical Center .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Patient Resources

None available

NGC Status

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